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sequently, nothing is left of de Vries's mutation theory but the bare facts represented by his experiments, which, indeed, are valuable for the study of variation, but belong to a class that was already known to Darwin when he wrote his 'Origin of Species' and 'Variation under Domestication.' For the rest, I do not see that there is anything in the mutation theory which might advance our general knowledge of the factors cooperating in evolution.

A. E. ORTMANN.

CARNEGIE MUSEUM, PITTSBURG, PA.,

April 26, 1906.

MISREPRESENTATIONS OF NATURE IN POPULAR MAGAZINES.

FROM the numerous and conspicuous mistakes made by the popular magazines when treating of geographical and geological subjects it would appear that there is occasion for more careful editing by men conversant with scientific affairs.

Many of the mistakes are more than simply inaccuracies of statement or occasional exaggeration. They are often the most conspicuous thing in the magazine.

Take, for example, the finely colored full-page picture in the *Century* (Vol. XLVII., p. 553) entitled 'Sulphur Deposits at the Crater Vesuvius.' The fact is that there are no sulphur deposits at Vesuvius. Not only are there no deposits, but even a trace of sulphur is difficult to find. Unless the volcano changes its chemistry to accord with the *Century* there will be none from this last eruption. The artist evidently mistook the lava which had been bleached by chlorine to be sulphur; the editor allowed the mistake to pass; and all who gain their idea of Vesuvius from that source will have much to unlearn when they hear the facts.

The Outing Magazine, edited by men who have more than an indoor acquaintance with nature, begins this year with a frontispiece (January number) entitled 'Bridger was the first man to gaze on the Great Salt Lake' and represents Bridger standing on the shore while his horse, with nose deep in the lake, is eagerly drinking! We have seen many wonderful

bronchos, but never one that could drink the water of Salt Lake.

A well-written article in *McClure's* (Vol. XXV., p. 504) is illustrated by many pictures of the Grand Cañon of the Colorado. The coloring was evidently done by one who had never seen the region. It entirely misrepresents the cañon and must have annoyed the artist. But even the drawing gives a wrong impression of the greatest of cañons, just as would a picture of Broadway or of State Street which represented the high buildings sloping towards each other across the street. There are no narrow gorges in the cañon such as those pictured. This style of illustration is a recurrence of the type of picture furnished by Egloffstein in 1857 for the Ives Report published by the United States government. It was hoped that misrepresentations of that character would end with that century.

Nature is as interesting and impressive as are exaggeration and misrepresentation. A picture may have the educational value of many pages of sentences, since it so readily catches the eye. Many people will see a picture, while few read the text. Consequently it is important that pictures should represent facts and it behooves the popular magazines to have not only careful literary, but scientific editing as well.

A. R. CROOK.

ALLUVIAL SLOPES.

ONE of the commonest topographic features of the western part of the United States, particularly of the arid west, is the characteristic sloping plain which fringes the flanks of the mountain ranges and is formed by coalescent alluvial fans. Many terms have been used to denote this sloping plain, among which are: alluvial slope, alluvial apron, alluvial piedmont plain, compound alluvial fan, wash apron, débris apron, detrital slope, wash plain, out-wash plain, foot slope, aggradation plain, boulder wash plain and others. It seems desirable that such a typical feature should bear a more specific appellation. The consensus of opinion of the geologists of the United

States Geological Survey, as recently expressed, appears to strongly favor the use of *alluvial slope*, which thus takes its place in the genetically related series, alluvial fan, alluvial slope and alluvial plain.

C. E. SIEBENTHAL.

SPECIAL ARTICLES.

THE NORTHERN LIMIT OF THE PAPAW TREE.

WHILE the flora of the upper Mississippi Valley was yet in its primeval condition I had good opportunities to observe the northward geographical extension, and apparently the northern limit, of certain plants which reach full maturity of growth and fruitage farther south. Although the floral conditions which then existed in that region have been in part modified by the progress of civilization, the chief of the following statements are based upon conditions which still exist. Among the plants referred to is the papaw, *Asimina triloba*, which reaches its maximum size, that of a small tree, and its most abundant fruitage in the broad region of which the mouth of the Ohio River is near the center. Two of the many other trees which are associated with it there and which have accompanied it in their northward dispersion, are selected for special comparison. These are the persimmon, *Diospyros Virginiana*, and the pecan, *Carya olivæformis*.

It is of relevant interest to note that although these three species are commingled in the same flora in the valley of the upper Mississippi, their post-glacial dispersion into that region seems to have been from a pre-glacial flora which occupied the papaw area before mentioned and which was in part made up of trees from different districts. The districts which thus furnished the persimmon and pecan respectively are assumed to have been identical with their present respective areas of greatest abundance and fruitfulness. That is, the center of the area of greatest abundance and fruitfulness of the persimmon may be designated as within the state of Virginia, which is far east of the similar center of the papaw area, while it is in southern Texas and the adjacent part of Mexico, far from both the

persimmon and papaw centers, that the pecan reaches its greatest abundance and perfection. The persimmon apparently spread westward into the papaw area and thence northward; while the pecan ranged up into the Mississippi Valley, traversing the papaw area, and thence at least as far north as the forty-first parallel of north latitude, a thousand miles from the region of its fullest development. The unaided dispersion of the papaw seems to have been proportionately less than that of either the persimmon or pecan.

In 1846, pecan trees of moderately large size were yet growing and bearing fruit in fair abundance ten miles above Burlington, Iowa, and a number of persimmon trees of moderate size were also then growing and bearing fruit in its season a few miles below Burlington, on the Illinois side of the great river. Neither of these two trees was then common in that region and, so far as I could ever learn, the localities mentioned constituted the northern limit of their dispersion. It is pertinent to my present purpose to mention that both of those trees retained their fruiting function unimpaired in their most northerly extension, although the case was very different with the papaw. During many years I observed the last-named plant growing as a part of the local flora at numerous localities along the banks of the Mississippi, from northeastern Missouri to the forementioned locality north of Burlington, where the pecan grew, the distance between the two extreme localities being about seventy-five miles. In the southernmost of the Missouri localities referred to the plant reached almost arborescent size and frequently, but never abundantly, bore and matured its fruit. From there northward, however, although the vegetative growth of the plants was apparently healthful, they never fruited, and gradually diminished in size to shrubs, a few feet in height. It is true that some thrifty specimens which grew upon the Iowa bank of the Mississippi River, a few miles above Keokuk, occasionally flowered, but, although I frequently examined them in the flowering and fruiting seasons, I could never find any evidence that fruit had been formed, or that any ovaries had ever become